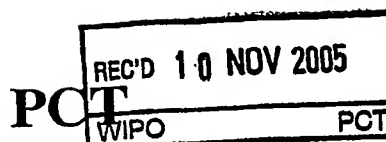


# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:  
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## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference

GRA26 020

Date of mailing  
(day/month/year)

08 NOV 2005

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US04/30781

International filing date (day/month/year)

17 September 2004 (17.09.2004)

Priority date (day/month/year)

17 September 2003 (17.09.2003)

International Patent Classification (IPC) or both national classification and IPC

IPC(7): H04B 7/15; H04Q 7/20 and US Cl.: 455/11.1, 456.1

Applicant

ANDREW CORPORATION

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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Form PCT/ISA/237 (cover sheet) (January 2004)

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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US04/30781

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing  
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format  
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US04/30781

**Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims <u>1-7 and 10-26</u>	YES
	Claims <u>8 and 27-30</u>	NO
Inventive step (IS)	Claims <u>1-30</u>	YES
	Claims <u>NONE</u>	NO
Industrial applicability (IA)	Claims <u>1-30</u>	YES
	Claims <u>NONE</u>	NO

**2. Citations and explanations:**

Claims 1-7 and 9-26 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest:

Regarding claim 1, the reference Baker discloses where in a wireless communication system having at least one repeater, and a geo-location system for determining the location of a mobile by measuring an attribute of the mobile's uplink signal a method of determining if the uplink signal is received directly or via the at least one repeater, comprising: estimating the location of the mobile appliance by the geo-location system. The reference Durrant discloses of determining if a Timing Advance (TA) of the uplink signal can be associated with the Equivalent Propagation Distance (EPD) of the at least one repeater; determining which receivers have received the uplink signal; determining which transmitters are received by the mobile appliance; comparing the at least one figure of merit to at least one or more threshold values to determine whether the uplink signal is received directly or from the at least one repeater. The reference Kuwahara discloses of determining an accuracy of the estimate.

The prior art of record fails to disclose determining the relationship between the power of the received signals and the power at which the mobile transmitted the uplink signal; determining at least one figure of merit based on the accuracy of the estimate, the TA of the uplink signal, the equivalent propagation distance, the receivers receiving the uplink signal, the transmitters received by the mobile appliance, the power of the received signal and the power at which the mobile transmitted the uplink signal

Regarding claim 12, the reference Baker discloses where in a wireless communication system having one or more repeaters and a geolocation system which determines the location of a mobile by measuring an attribute of the mobile appliance's uplink signal, a method of determining if the uplink signal is received directly or via one of the one or more repeaters comprising.

The prior art of record fails to disclose of determining the probability for each of two hypothesis and choosing the hypothesis with the greatest probability, wherein the probabilities for each of the two hypothesis are based on a timing advance of the transmitted uplink signal, hearability of the transmitted uplink signal and known locations and delays of the one or more repeaters.

Regarding claim 17, the reference Baker and Durrant disclose where in a network overlay geo-location system for locating a mobile appliance in a host wireless communication system where the host wireless communication system has a plurality of base stations and one or more repeater stations, a method of determining whether a signal transmitted by a mobile appliance is received at one of the base stations directly or via the one or more repeater stations, comprising: determining the approximate distance between the base station and the mobile appliance based on the TA of the mobile appliances transmitted signal,

The prior art of record fails to disclose of determining a touch stone equivalent distance, comparing the equivalent distance with the approximate distance and, determining if the signal is received directly or through a repeater based in part on the comparison.

**WRITTEN OPINION OF THE  
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**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

Regarding claim 19, the reference Baker and Durarant disclose where in a wireless communication system having at least one repeater, a method of determining if an uplink signal is received directly from a mobile or via the at least one repeater comprising; determining one or more factors selected from the group of relationship between a TA of the uplink signal with the equivalent propagation distance of the at least one repeater, receivers that have received the uplink signal, transmitters received by the mobile appliance, and, a second relationship between the power of the received signal, the power at which the mobile transmitted the uplink signal and the TA; determining at least one figure of merit based on the one or more factors selected.

The prior art of record fails to disclose of comparing the at least one figure of merit to at least one or more threshold values to determine whether the uplink signal is received directly or from the at least one repeater.

Regarding claim 9, The prior art of record fails to disclose where the equivalent propagation distance is a function of the distance between the one or more repeaters and a receiver, the delay of the one or more repeaters and a timing advance resolution.

Claims 2-7, 13-16, 18, 20-26 and 10-11 depend on claims 1, 12, 17, 19 and 9; therefore, the same reasons for allowance apply as in the independent claims listed above.

Claim 8, lack novelty under PCT Article 33(3) as being obvious over Baker in view of Kuwahara et al. (Kuwahara, US Pub. No.: 2003/0,162,550 A1)

Regarding claim 8, the reference Baker teaches where in a wireless communication system (figure 1) having one and a geolocation system which determines the location of a mobile (figure 1, item 120; paragraph 0026) by measuring an attribute of the mobile appliance's received uplink signal (paragraph 0026, lines 11-17), a method of determining if the uplink signal is received directly or via one of the one or more repeaters comprising (paragraph 0026, lines 17-20).

Kuwahara further teaches of determining a timing advance of the received uplink signal and comparing the timing advance with a known equivalent propagation distance associated with each of the one or more repeaters and determining whether the uplink signal is received directly or via one of the one or more repeaters based on the comparison (paragraph 0052).

Claims 27-30, lack novelty under PCT Article 33(3) as being obvious over Durrat in view of Kuwahara et al.

Regarding claim 27, Durrat teaches where in a wireless communication system having at least one repeater (figure 1, item 120), a method of determining if an uplink signal from a mobile is not operated on by the at least one repeater comprising (cols 3 and 4, lines 1-6 and 30-35, respectively), retrieving a timing advance value of the uplink signal (col. 6, line 45-67); comparing the timing advance value to a known equivalent propagation distance of the at least one repeater (col.s. 9 and 10, lines 66-67 and 1-11).

Kuwahara further teaches of determining if the uplink signal is not received from the at least one repeater based on the comparison (paragraph 0052, lines 26-31).

Regarding claim 28, Baker in view of Kuwahara teaches all the limitations of claim 27. Kuwahara further teaches where the known equivalent propagation distance is a function of the distance between the at least one repeater and a receiver and the time delay associated with the at least one repeater function (par. 0052, lines 10-26).

Regarding claim 29, Baker in view of Kuwahara teaches all the limitations of claim 28. where the comparison is at least in part a function of the resolution of the TA (col. 6, lines 50-57).

Regarding claim 30, Baker in view of Kuwahara teaches all the limitations of claim 28. where the radius of the area served by the at least one repeater is much less than the distance between the at least one repeater and the receiver (figure 1; where "the radius of the area served by the at least one repeater is much less than the distance between the at least one repeater and the receiver").